Texas Water Development Board

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TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
John Dupnik, P.G., Deputy Executive Administrator, Water Science and Conservation
Todd Chenoweth, General Counsel
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FROM: Mark W. Wentzel, Ph.D., Manager, Instream Flows
Carla G. Guthrie, Ph.D., Director, Surface Water

DATE: July 31, 2018

SUBJECT: Water Resources Investigations with U.S. Geological Survey

ACTION REQUESTED

Consider authorizing the Executive Administrator to negotiate and execute a contract in an amount not to exceed $2,161,969 for continuation of the Water Resources Investigations data collection program with the U.S. Geological Survey in fiscal year 2019.

BACKGROUND

Water data is the foundation upon which Texas builds its water plans, protects against flood risk, and manages water resources. Adequate data is necessary to knowing how much water is available for current and future use or how drought, flood, or other factors may affect water use and environmental resources. The first U.S. Geological Survey streamflow gage in Texas was installed 129 years ago on the Rio Grande near El Paso. The State-Federal Cooperative Program for Water Resources Investigations started shortly thereafter with the first jointly funded gage being installed in 1915. The U.S. Geological Survey currently maintains a network of 606 streamflow and 146 lake level gages providing near real-time data across the state.

Each year the Texas Water Development Board (TWDB) enters into a contractual agreement with the U.S. Geological Survey to cover the cost of data collection for a portion of the statewide network (Table 1). Gages included in this agreement collect data for one of two primary purposes, either water resources monitoring and planning or flood forecasting and warning. Each year, the U.S. Geological Survey contributes some funding toward the cost of gages for water resources monitoring and planning but does not provide cost share related to gages that are primarily for flood forecasting and warning.

In fiscal year 2018, the TWDB partnered with the U.S. Geological Survey to operate and maintain 78 streamflow and 39 lake level gages (Table 1). This included 53 streamflow and 35 lake level gages for water resources monitoring and planning, which is consistent with our support for this purpose for many decades. This also included 25 streamflow and 4 lake level gages for flood forecasting and warning, a new aspect of our water resources gaging program that began in fiscal year 2016. Funds this past year also provided for the installation of 12 new streamflow gages to expand our network of gages for flood forecasting and warning. Locations of new gages were selected in consultation with the U.S. Geological Survey and National Weather Service from a list of the 42 highest priority locations identified in a study completed in December 2016 (TWDB Contract Number 1600012027). Total cost of the contract was $2,070,095, with the U.S. Geological Survey contributing $363,735 and the TWDB contributing $1,540,234 from General Revenue funds and $258,000 from Floodplain Management Account Fund No. 330.

KEY ISSUES

Two issues are impacting the Water Resources Investigations contract with the U.S. Geological Survey in fiscal year 2019. First, the U.S. Geological Survey is increasing the amount charged for operation and maintenance of the average streamflow or lake level gage by approximately 3 percent. Although operation and maintenance cost increases have averaged approximately 1 percent per year over the last several decades, this will be the first cost increase since fiscal year 2011.

Second, the U.S. Geological Survey will begin charging for operation and maintenance of rain gages collocated with streamflow and lake level gages. In the past, when a suitable site was available nearby, the U. S. Geological Survey included a rain gage as part of the setup for a streamflow or lake level gage. They used these rain gages for operational purposes but did not carry out routine inspections or quality assurance measures, which are required to make the data acceptable for general scientific or interpretive studies. The U.S. Geological Survey did not charge for these rain gages and only kept the data available online for 120 days. In recent years, however, they have received numerous inquiries and requests related to this data. Beginning in fiscal year 2019, the U.S. Geological Survey will maintain collocated rain gages to meet minimum quality standards for rainfall data. However, they will now charge $1,500 per year to continue operating and maintaining rain gages collocated with existing streamflow or lake level gages.

Accurate rain gage data is of value to both water resources monitoring and planning and flood forecasting and warning. Rainfall data is valuable for inferring planning information about ungaged watersheds based on available data from gaged watersheds. In addition, rainfall data is of direct interest to flood forecasting and monitoring efforts. In some parts of the state, the U.S. Geological Survey collocated rain gages provide the only rainfall data for 20 or more miles, making them extremely valuable for both water resources planning and monitoring and flood warning and forecasting. In other areas of the state, suitable rainfall data can be obtained from weather station networks maintained by the TWDB (TexMesonet), National Weather Service, and others. In these areas, collocated rain gages are less valuable.

The current funds available for the Water Resources Investigations contract with the U.S. Geological Survey for fiscal year 2019 will support as many as 56 collocated rain gages at a cost of $84,000. Collocated rain gages selected for inclusion in the contract will be chosen based on their distance from alternative sources of accurate rainfall data. Collocated rain gages with a greater distance to alternative rainfall data will be maintained, those closer to alternative rainfall data will be dropped. In future years, as TWDB's TexMesonet and other weather station networks expand across the state, additional collocated rain gages will become less valuable and may be dropped from the contract.

The Executive Administrator proposes to continue the Water Resources Investigations contract with the U.S. Geological Survey for fiscal year 2019 to support gages that focus on water resources data collection as well as flood warning and forecasting. A portion of the contract will cover operation and maintenance for 53 streamflow, 35 lake level, and 24 rain gages that provide data for water resources monitoring and planning (Table 1). Total costs associated with this objective will be $1,054,249. The U.S. Geological Survey will contribute $363,735, and the TWDB will contribute the remaining $690,514 from General Revenue funds.

A second portion of the contract will support flood warning and forecasting. The U.S. Geological Survey does not have cost-share funds to contribute to these gages. During fiscal year 2019, the TWDB will provide the entire $1,107,720 associated with the installation of 9 new streamflow gages, operation and maintenance costs for a partial year associated with these new gages, and full year operation and maintenance costs for 37 existing streamflow, 4 lake level, and 32 rain gages (Table 1). These funds will be provided from General Revenue ($849,720) and the Floodplain Management Account Fund Number 330 ($258,000). New gages installed in fiscal year 2019 will be selected in consultation with the U.S. Geological Survey and National Weather Service from a list of the 42 highest priority locations identified in a study completed in December 2016 (TWDB Contract Number 1600012027).

The total cost of the Water Resources Investigations contract will be $2,161,969, with $363,735 provided by the U.S. Geological Survey and the remaining $1,798,234 provided by the TWDB.

RECOMMENDATION

The Executive Administrator concludes that the Joint Funding Agreement with the U.S. Geological Survey for Water Resources Investigations furthers the objectives of Texas Water Code §16.012 for statewide water resources data collection and dissemination and recommends approval.

Table 1. Summary of Water Resources Investigation program for fiscal years 2018 and 2019.

			Number of Gages			Funding			
						USGS	TWDB		
Fiscal Year	Objective	Service	Stream-flow	Lake Level	Rain*	Cost Share	General Revenue	FMA Fund No. 330	Total by Objective
2018	Water resources data	Operation and Maintenance	53	35		$363,735	$627,870		$991,605
	Flood forecasting and warning	Installation	12				$673,000		
		Operation and Maintenance	25	4			$147,490	$258,000	$1,078,490
								Total	**$2,070,095**
2019	Water resources data	Operation and Maintenance	53	35	24	$363,735	$690,514		$1,054,249
	Flood forecasting and warning	Installation and Partial Year O&M	9				$498,200		
		Operation and Maintenance	37	4	32		$351,520	$258,000	$1,107,720
								Total	**$2,161,969**

*In fiscal year 2018, the U.S. Geological Survey did not charge for collocated rain gages as they were not regularly maintained and data was not subjected to significant quality assurance/quality control checks. Beginning in fiscal year 2019, the U.S. Geological Survey will maintain rain gages and data to meet minimum data standards but will pass operation and maintenance costs on to cooperators.